

**Supplemental Specification
2005 Standard Specification Book**

SECTION 01452

PAVEMENT SMOOTHNESS

Delete Section 01452 in its entirety and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Process and procedures for acceptance testing and determination of Incentive/Disincentive for smoothness of Hot Mix Asphalt (HMA), Open Graded Surface Course (OGSC), Stone Matrix Asphalt (SMA), and Portland Cement Concrete Pavement (PCCP) using a California type profilograph or profiler, approved and certified by the Department.

1.2 RELATED SECTIONS

- A. Section 02741: Hot Mix Asphalt (HMA)

1.3 GENERAL REQUIREMENTS

- A. Pavement smoothness is determined through Department inspection of Contractor testing using a California type profilograph or profiler, approved and certified by the Department.
 - 1. Certify operators and equipment through the Department.
 - 2. Engineer verifies certifications.
- B. Comply with project Traffic Control Plan and all applicable safety requirements when performing testing.

1.4 ACCEPTANCE

- A. After all corrective work has been performed, notify the Engineer in writing at least two working days before scheduling Department inspection of acceptance testing on the final pavement surface.
 - 1. Clearly define the areas to be tested for acceptance in the written notification.
 - 2. Do not perform any work on the final surface after acceptance testing, except as directed by the Engineer.
- B. For purposes of determining incentive/disincentive, the Department evaluates the surface by section, defined as:
 - 1. Class I surface, 0.1 mile in length, including the adjacent shoulder. (Refer to Table 1 for definition of Class I surfaces). Begin the initial section at the start of the project. Lay out subsequent sections consecutively to the end of the project.
 - a. Testing consists of a single trace measurement of each wheel path, defined as a continuous parallel line 2.5 ft inside the projected lane or median lines.
 - b. Testing of adjacent shoulders having a design width of 6 ft or greater consists of a single trace measurement, approximately centered in the shoulder.
 - c. Determine the Profile Index (PI) by taking the average of all profile traces taken on the section.
 - 1) Include profile trace deviations from manholes, valves, and other facilities in the profile trace when the contract requires the adjustment or reconstruction of these facilities.
 - 2) Exclude profile trace deviations from manholes, valves, and other facilities in the profile trace when the contract does not include adjustment or reconstruction of these facilities.
 - 3) Do not measure PI for shoulders having a design width less than 6 ft
- C. The Department evaluates longitudinal and transverse deviations for both Class I and Class II surfaces. Refer this Section, article 3.1 for construction requirements.
- D. If the final lift of pavement cannot be completed due to seasonal limitations, the Department evaluates all roadway sections paved through the final lift and evaluates the remaining final lift of pavement upon completion.

1.5 MEASUREMENT AND PAYMENT PROCEDURE

- A. All work necessary to prepare the pavement for testing, such as but not limited to sweeping, is incidental to the work and is not measured for payment.
 - 1. Include all costs and resources for smoothness testing, preparation and correction in the surfacing bid items.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 HMA, SMA, AND OGSC

- A. Construction Requirements
 - 1. Construct finished pavement to meet the surface requirements in Table 1.
 - 2. Identify defects exceeding the limits in Table 1 and correct before acceptance testing.
 - a. Analyze the profile using 0.2-inch blanking band.
 - b. Correct defects across the entire width of the traffic lane or shoulder either by grinding with a device approved by the Engineer, or by filling as directed by the Engineer.
 - c. Re-profile for correction verification before acceptance testing.
 - 3. Correct transverse defects where the pavement surface varies more than 1/8 inch from the lower edge of a 10-foot straightedge placed perpendicular to the centerline of the roadway.
 - 4. Seal areas that have been ground with asphalt tack coat.
 - a. Use a tack coat application rate between 0.07 and 0.14 gal/yd².
 - 5. The Department inspects acceptance testing before the placement of Chip Seal Coat, when applicable.
- B. Acceptance Testing
 - 1. Perform acceptance testing in accordance with article 1.4.
 - a. Acceptance testing consists of PI determination for Class I surfaces and determination of compliance with allowable profile deviation for Class II surfaces.

2. Incentive/Disincentive - HMA
 - a. Incentive/Disincentive applies only to Class I surfaces for each pavement section defined in this Section, article 1.4, paragraph B.
 - 1) Incentive/Disincentive is calculated according to Table 2, with partial sections prorated based on length.
 - 2) Incentive/Disincentive does not apply to HMA surfaces on projects requiring OGSC or SMA.
 - 3) Any section requiring grinding exceeding 20 yd² does not qualify for incentive. Disincentive remains applicable for sections where grinding exceeds 20 yd².
 - b. Any section still requiring corrective work that is identified at the time of acceptance testing results in loss of incentive for the section. Disincentives remain applicable and are based on PI obtained at the time of acceptance testing.
 - c. Failure to correct defects, identified at the time of acceptance testing, within 14 calendar days after notification by the Engineer results in liquidated damages assessed at \$100 per day after 14 calendar days per each section needing corrective work.
 - 1) The Engineer may waive liquidated damages when it is determined to be in the best interests of the Department to defer corrective work.
3. Incentive/Disincentive - OGSC and SMA Surfaces
 - a. Incentive/Disincentive applies only to Class I surfaces for each pavement section defined in this Section, article 1.4. Partial sections are prorated based on length and Incentive/Disincentive is calculated according to Table 3, with the following exception:
 - 1) Any section requiring grinding exceeding 20 yd² or any section still requiring corrective work that is identified at the time of acceptance testing results in a disincentive of \$1000 per section.
 - b. Failure to correct defects, identified at the time of acceptance testing, within 14 calendar days after notification by the Engineer results in liquidated damages assessed at \$100 per day per each section needing corrective work.
 - 1) The Engineer may waive liquidated damages when it is determined to be in the best interests of the Department to defer corrective work.

3.2 PORTLAND CEMENT CONCRETE PAVEMENT (PCCP)

- A. Construction Requirements
 1. Construct finished pavement to meet surface requirements listed in Table 1.
 2. Identify defects exceeding the limits in Table 1 and correct before acceptance testing.

- a. Analyze the profile using 0.2-inch blanking band.
 - 3. Correct defects across the entire width of the traffic lane or shoulder by grinding with a device approved by the Engineer.
 - a. Re-profile for correction verification before acceptance testing.
 - 4. Correct transverse defects where the pavement surface varies more than 1/8 inch from the lower edge of a 10-foot straightedge placed perpendicular to the centerline of the roadway.
- B. Acceptance Testing
- 1. Perform acceptance testing in accordance with article 1.4.
 - a. Acceptance testing consists of PI determination for Class I surfaces and determination of compliance with allowable profile deviation for Class II surfaces.
 - 2. Incentive/Disincentive - PCCP
 - a. Incentive/Disincentive applies only to Class I surfaces for each pavement section defined in this Section, article 1.4, paragraph B.
 - 1) Incentive/Disincentive is calculated according to Table 4, with partial sections prorated based on length.
 - b. Any section requiring grinding exceeding 20 yd² does not qualify for incentive.
 - c. Any section still requiring corrective work that is identified at the time of acceptance testing results in loss of incentive for the section. Disincentives remain applicable and are based on PI obtained at the time of acceptance testing.
 - d. Failure to correct defects, identified at the time of acceptance testing, within 14 calendar days after notification by the Engineer results in liquidated damages assessed at \$100 per day per each section needing corrective work.
 - 1) The Engineer may waive liquidated damages when it is determined to be in the best interests of the Department to defer corrective work.

Table 1

Surface Requirements				
Pavement Category	Class I Surface		Class II Surface	
	Section PI	Profile Deviation	Section PI	Profile Deviation
Category	in/mi	in/25ft	in/mi	in/25ft
1	5	0.3	N/A	0.3
2	7	0.3	N/A	0.3
Category 1	National Highway System and Truck Routes (See Section 02741, Table 11) and all other routes with surfaces having three or more opportunities for improving the ride. *			
Category 2	All other routes incorporating single lift overlays with not more than two opportunities for improving the ride. *			
Class I	Surfaces longer than 1000 ft in length consisting of all traffic and climbing lanes, passing lanes, acceleration and deceleration lanes, ramps, medians wider than 8 ft, and turn lanes. Includes bridges and bridge approach slabs with final riding surfaces placed as part of the contract. Excludes horizontal curves having a centerline radius of curvature less than 900 ft and areas within the superelevation transitions to these short radius curves.			
Class II	Surfaces consisting of all tapers, road approaches, mainline pavement sections with posted regulatory speeds less than 35 MPH, pavement within 15 ft of bridge decks and approach slabs not paved as part of the contract, pavement to a point 50 ft beyond the paving limits of the project, and all other surfaces not included in the Class I definition.			

* Each opportunity to improve the ride is one of the following: Placing a gravel or treated base course, OGSC, SMA, rotomilling, cold recycling, and each lift of paving. Leveling is not considered an opportunity to improve the ride.

Table 2

HMA Incentive/Disincentive	
Category	Incentive/Disincentive per Section
1	\$60 x [(Required in/mi) - (PI)]
2	\$30 x [(Required in/mi) - (PI)]

Table 3

OGSC & SMA Incentive/Disincentive	
Category	Incentive/Disincentive per Section
1	\$150 x [(Required in/mi) - (PI)]
2	\$100 x [(Required in/mi) - (PI)]

Table 4

PCCP Incentive/Disincentive	
Category	Incentive/Disincentive per Section
1	\$200 x [(Required in/mi) - (PI)]
2	\$125 x [(Required in/mi) - (PI)]

END OF SECTION